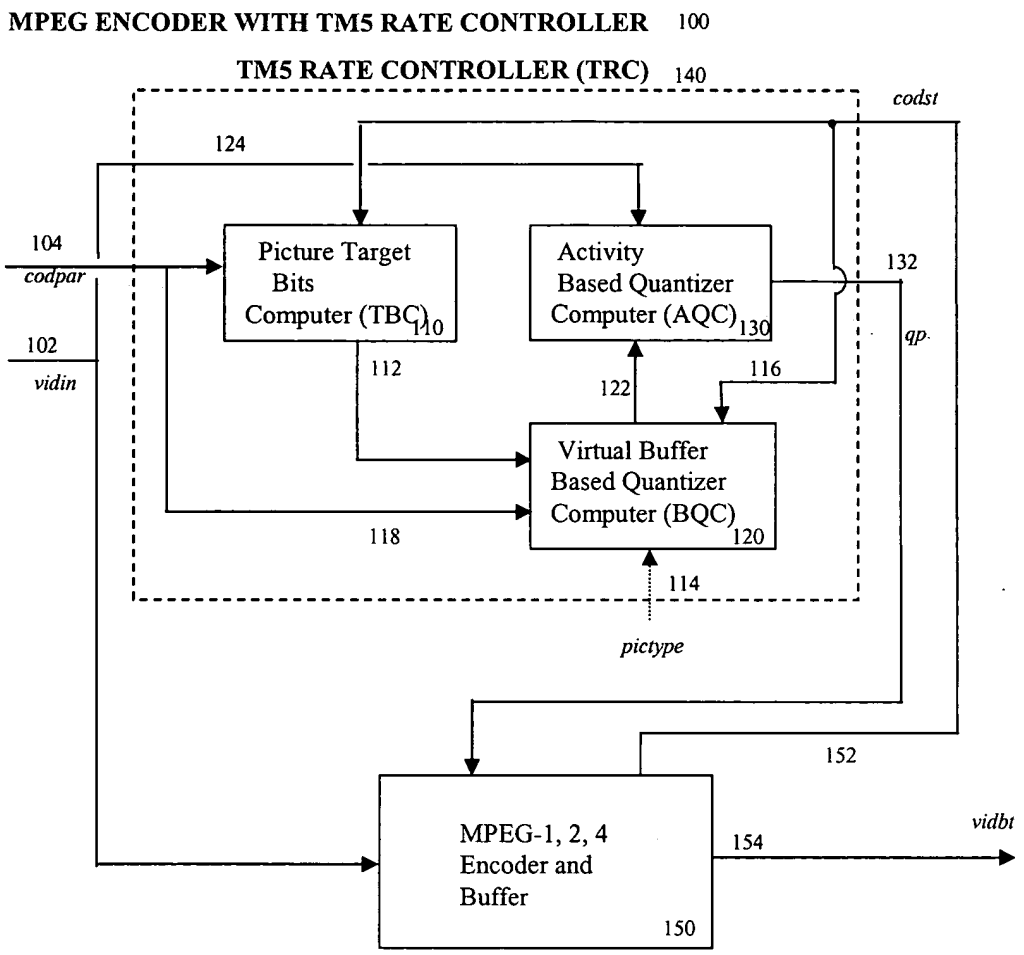
MPEG ENCODER WITH TM5 RATE CONTROLLER 100
TM5 RATE CONTROLLER (TRC) 140
codst
124
104
codpar
102
vidin
Picture Target Bits Computer (TBC) 110
Activity Based Quantizer Computer (AQC) 130
132
qp
112
116
122
Virtual Buffer Based Quantizer Computer (BQC) 120
118
114
pictype
152
MPEG-1, 2, 4 Encoder and Buffer 150
154
vidbt

**FIG. 1**

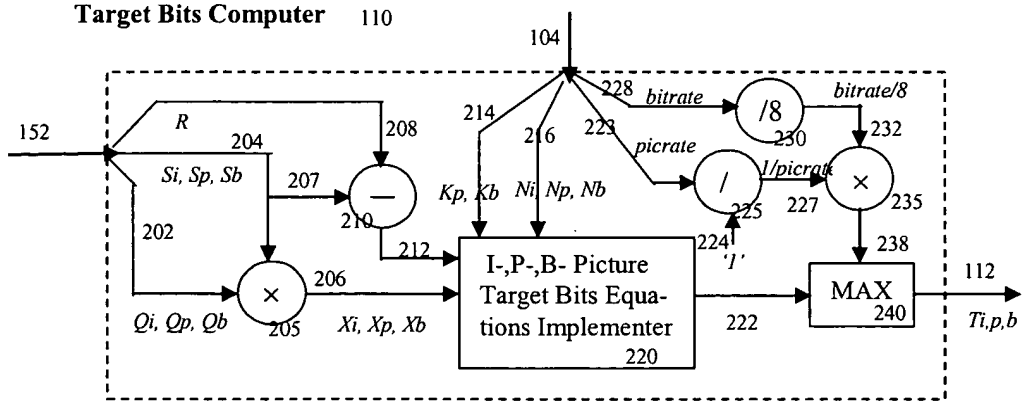
Target Bits Computer 110
104
152
R
204
208
214
216
228
bitrate
bitrate/8
/8
230
232
Si, Sp, Sb
207
210
Kp, Kb
Ni, Np, Nb
223
picrate
1/picrate
227
235
202
212
224
'1'
238
206
I-,P-,B- Picture Target Bits Equations Implementer 220
MAX 240
112
Qi, Qp, Qb
205
Xi, Xp, Xb
222
Ti,p,b

**FIG. 2A**

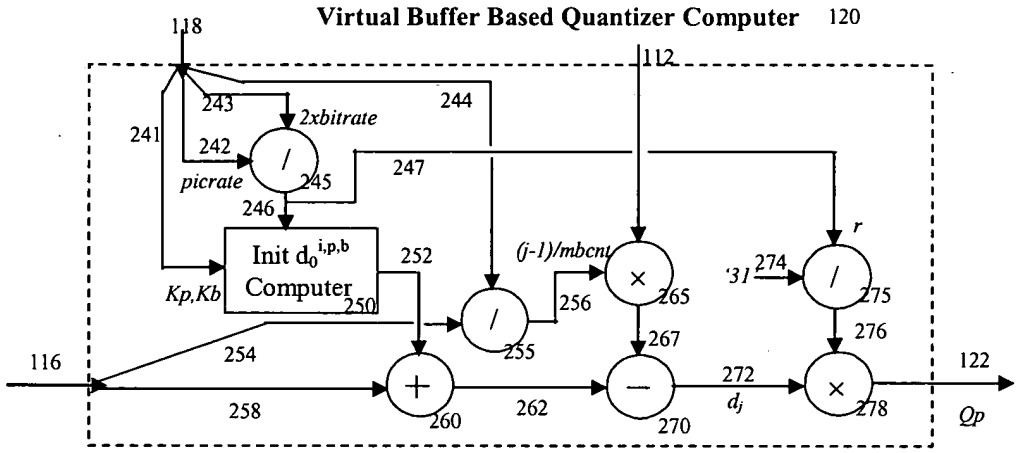
Virtual Buffer Based Quantizer Computer 120
118
112
243
2xbitrate
244
241
242
picrate
245
247
246
Init $d_0^{i,p,b}$ Computer
250
252
Kp,Kb
(j-1)/mbcnt
256
265
'31
274
r
275
276
267
255
116
254
258
260
262
270
272
$d_j$
278
122
Qp

FIG. 2B

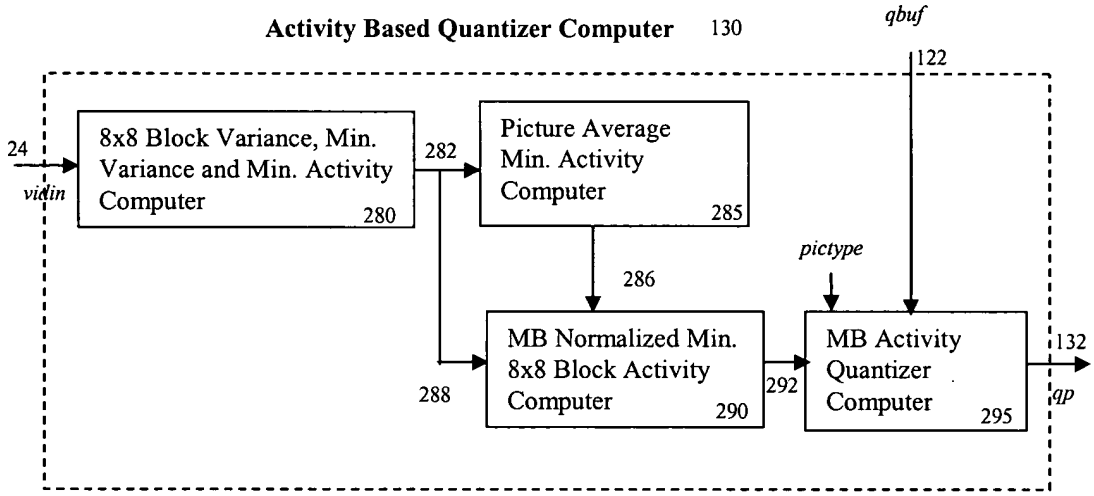
Activity Based Quantizer Computer 130
qbuf
122
24
vidin
8x8 Block Variance, Min. Variance and Min. Activity Computer
280
282
Picture Average Min. Activity Computer
285
286
pictype
MB Normalized Min. 8x8 Block Activity Computer
290
288
292
MB Activity Quantizer Computer
295
132
qp

FIG. 2C

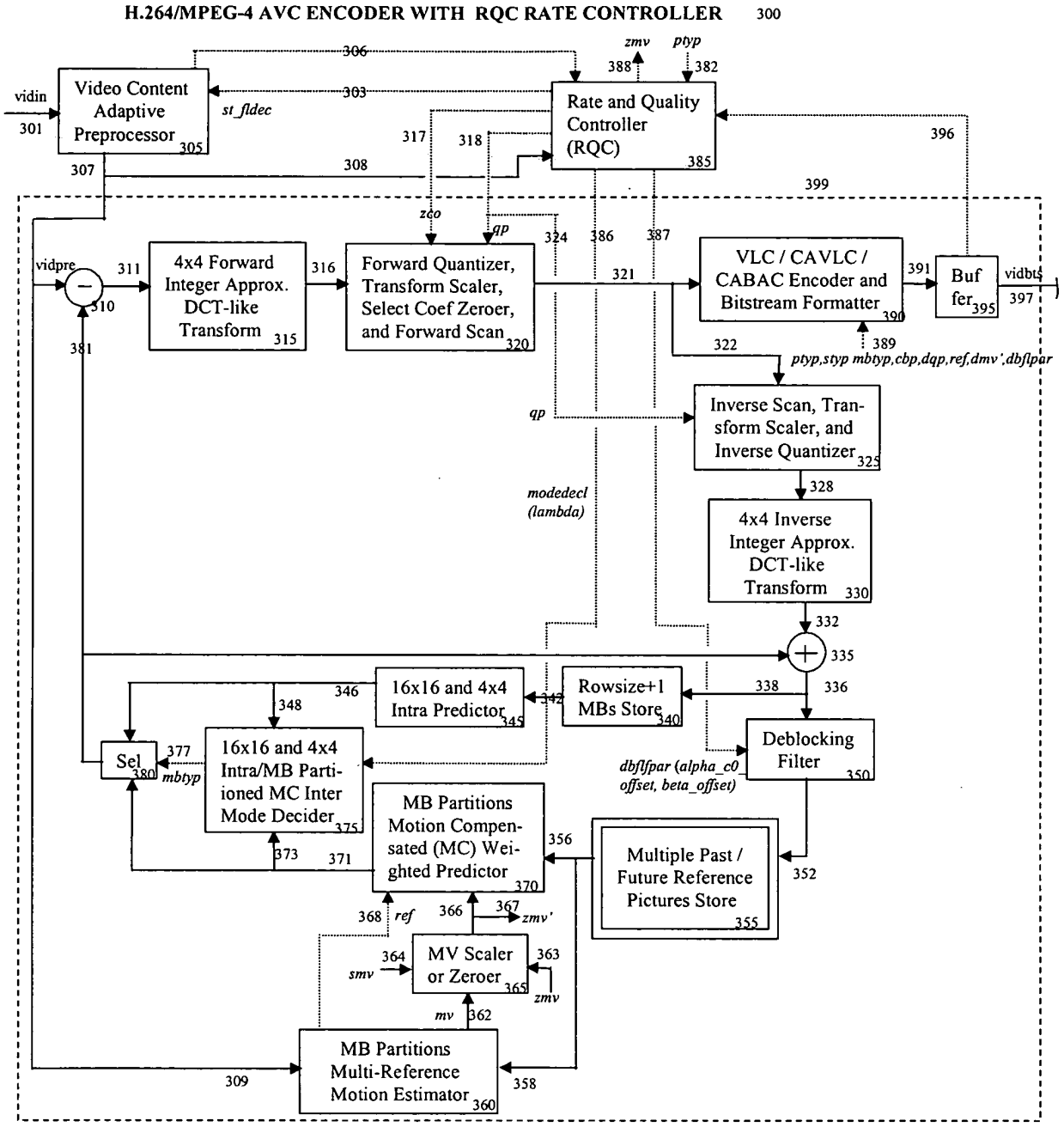
H.264/MPEG-4 AVC ENCODER WITH RQC RATE CONTROLLER 300
vidin
301
Video Content Adaptive Preprocessor 305
st_fldec
306
303
307
308
317
318
Rate and Quality Controller (RQC) 385
zmv
ptyp
388
382
396
399
zco
qp
324
386
387
vidpre
311
310
381
4x4 Forward Integer Approx. DCT-like Transform 315
316
Forward Quantizer, Transform Scaler, Select Coef Zeroer, and Forward Scan 320
321
VLC / CAVLC / CABAC Encoder and Bitstream Formatter 390
391
Buf fer 395
vidbts
397
322
389
ptyp,styp mbtyp,cbp,dqp,ref,dmv',dbflpar
qp
Inverse Scan, Transform Scaler, and Inverse Quantizer 325
328
modedecl (lambda)
4x4 Inverse Integer Approx. DCT-like Transform 330
332
335
336
338
346
348
16x16 and 4x4 Intra Predictor 345
342
Rowsize+1 MBs Store 340
Deblocking Filter 350
dbflfpar (alpha_c0_offset, beta_offset)
Sel 380
377
mbtyp
16x16 and 4x4 Intra/MB Partitioned MC Inter Mode Decider 375
373
371
MB Partitions Motion Compensated (MC) Weighted Predictor 370
356
Multiple Past / Future Reference Pictures Store 355
352
368
ref
366
367
zmv'
364
smv
MV Scaler or Zeroer 365
363
zmv
mv
362
MB Partitions Multi-Reference Motion Estimator 360
309
358

**FIG. 3**

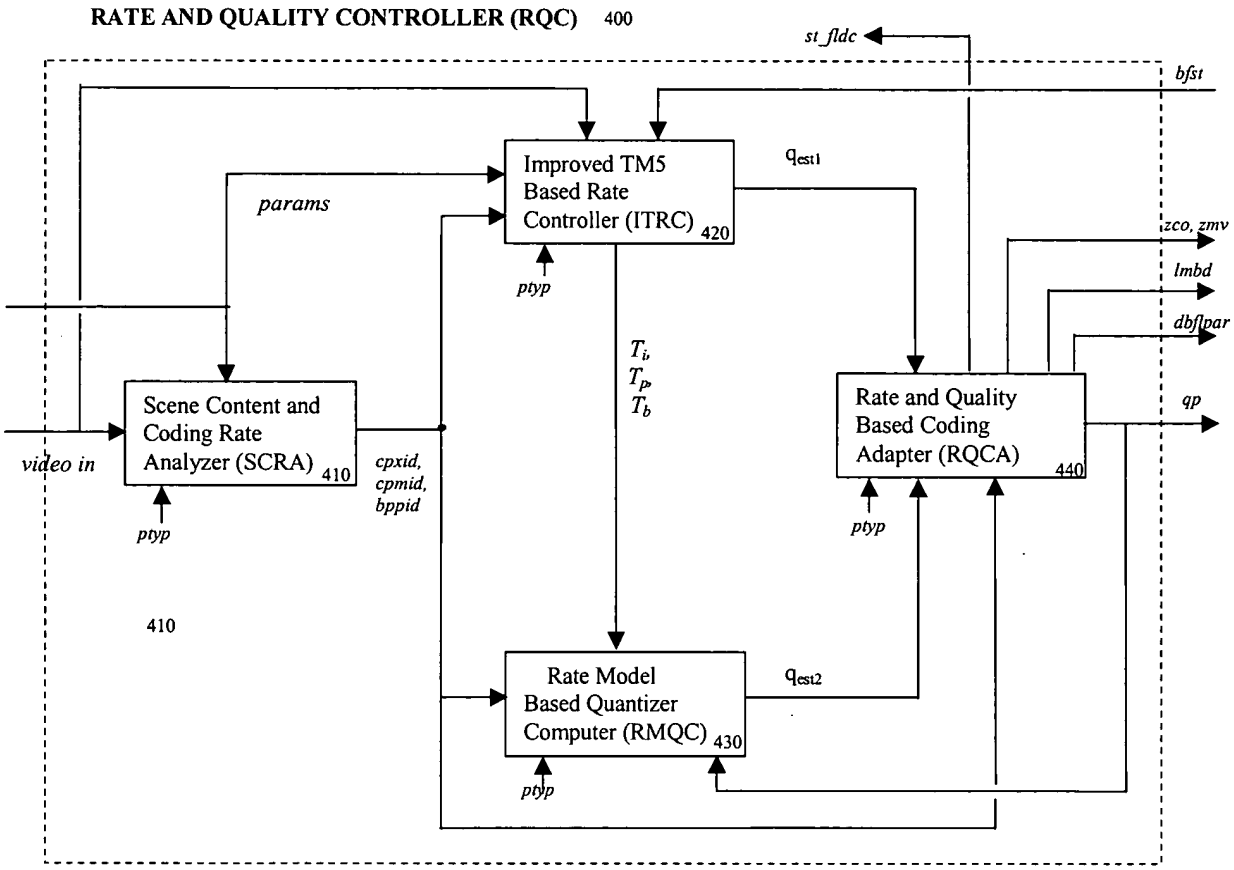
RATE AND QUALITY CONTROLLER (RQC) 400
st_fldc
bfst
Improved TM5 Based Rate Controller (ITRC) 420
qest1
params
ptyp
zco, zmv
lmbd
dbflpar
qp
Ti, TP, Tb
Scene Content and Coding Rate Analyzer (SCRA) 410
video in
cpxid, cpmid, bppid
ptyp
Rate and Quality Based Coding Adapter (RQCA) 440
ptyp
410
Rate Model Based Quantizer Computer (RMQC) 430
qest2
ptyp

**FIG. 4**

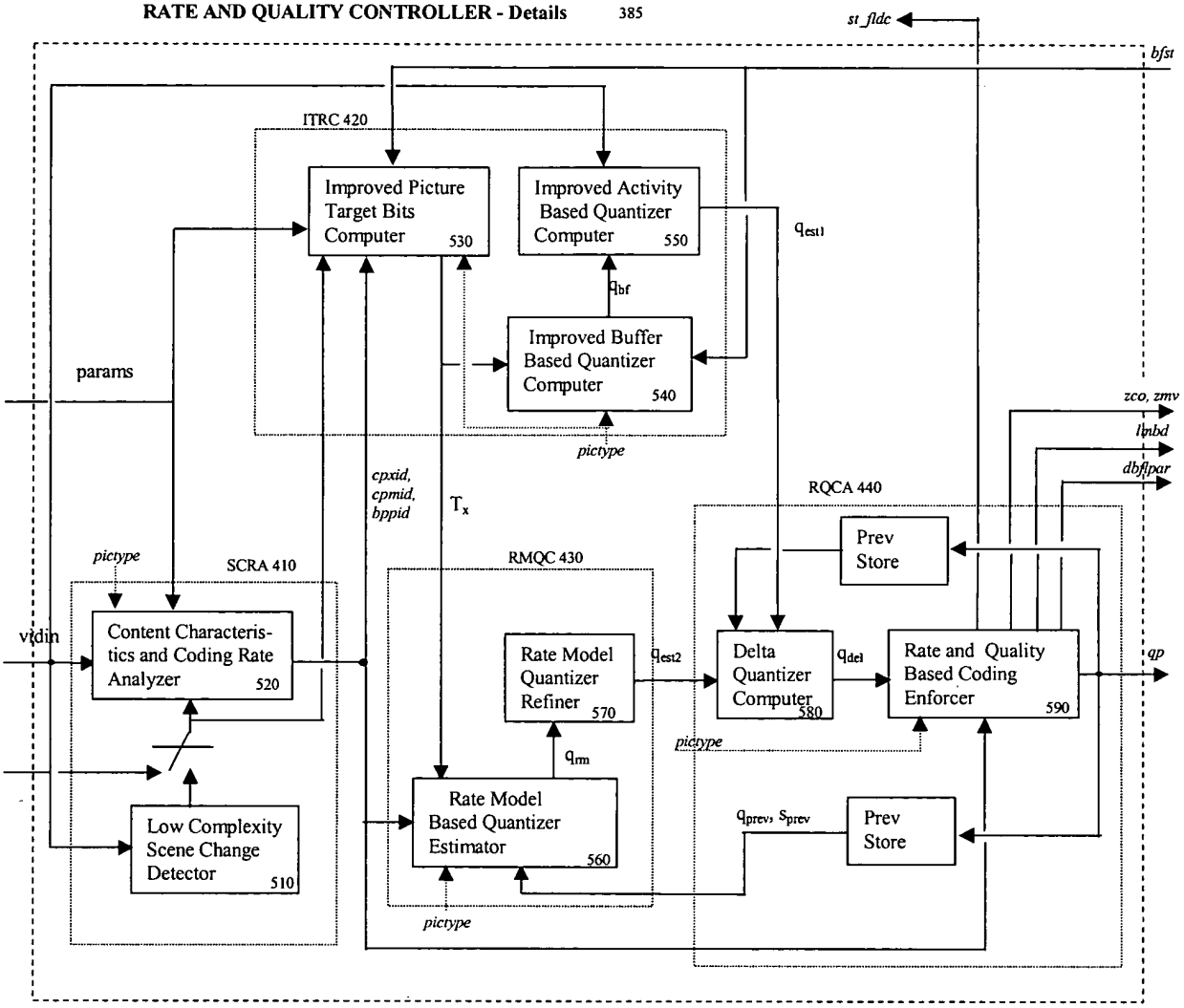
RATE AND QUALITY CONTROLLER - Details 385
st_fldc
bfst
ITRC 420
Improved Picture Target Bits Computer 530
Improved Activity Based Quantizer Computer 550
Improved Buffer Based Quantizer Computer 540
qest1
qbf
params
pictype
zco, zmv
llnbd
dbflpar
cpxid, cpmid, bppid
Tx
RQCA 440
Prev Store
pictype
SCRA 410
RMQC 430
vidin
Content Characteristics and Coding Rate Analyzer 520
Rate Model Quantizer Refiner 570
qest2
Delta Quantizer Computer 580
qdel
Rate and Quality Based Coding Enforcer 590
qp
pictype
qrm
Low Complexity Scene Change Detector 510
Rate Model Based Quantizer Estimator 560
qprev, Sprev
Prev Store
pictype

FIG. 5

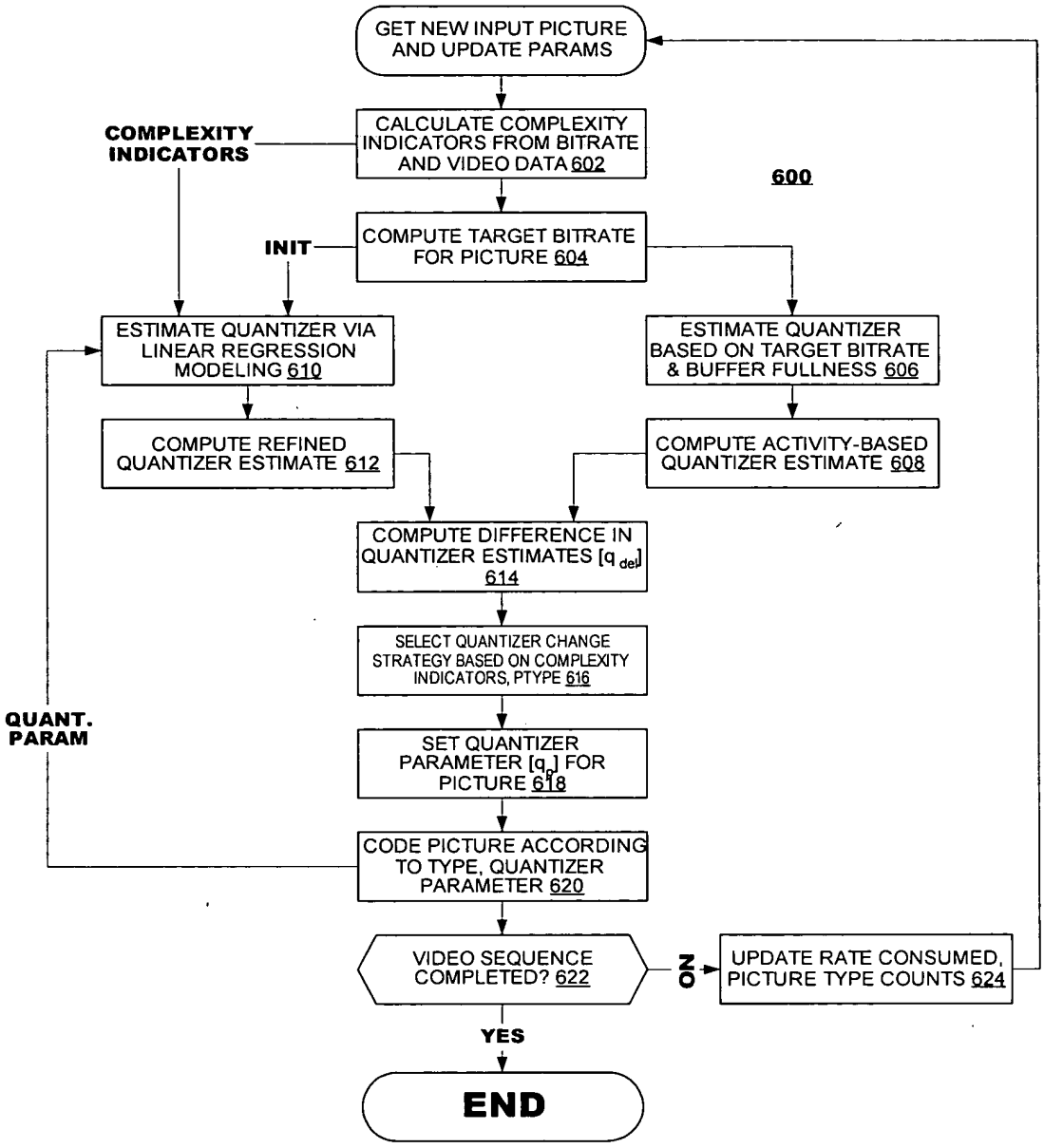
GET NEW INPUT PICTURE AND UPDATE PARAMS
CALCULATE COMPLEXITY INDICATORS FROM BITRATE AND VIDEO DATA 602
COMPLEXITY INDICATORS
600
COMPUTE TARGET BITRATE FOR PICTURE 604
INIT
ESTIMATE QUANTIZER VIA LINEAR REGRESSION MODELING 610
ESTIMATE QUANTIZER BASED ON TARGET BITRATE & BUFFER FULLNESS 606
COMPUTE REFINED QUANTIZER ESTIMATE 612
COMPUTE ACTIVITY-BASED QUANTIZER ESTIMATE 608
COMPUTE DIFFERENCE IN QUANTIZER ESTIMATES [q del] 614
SELECT QUANTIZER CHANGE STRATEGY BASED ON COMPLEXITY INDICATORS, PTYPE 616
QUANT. PARAM
SET QUANTIZER PARAMETER [q] FOR PICTURE 618
CODE PICTURE ACCORDING TO TYPE, QUANTIZER PARAMETER 620
VIDEO SEQUENCE COMPLETED? 622
NO
UPDATE RATE CONSUMED, PICTURE TYPE COUNTS 624
YES
END

FIG. 6A

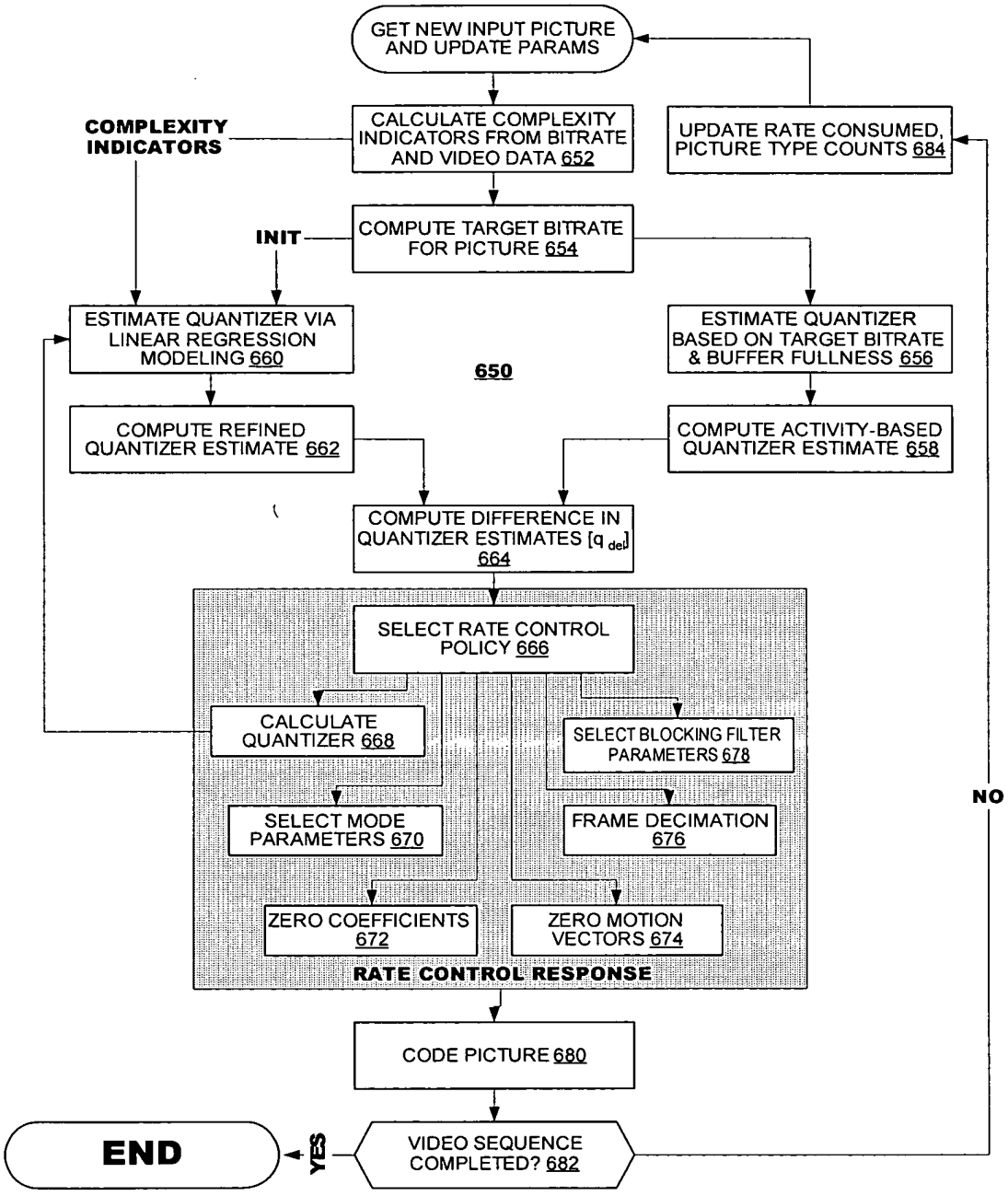
GET NEW INPUT PICTURE AND UPDATE PARAMS
COMPLEXITY INDICATORS
CALCULATE COMPLEXITY INDICATORS FROM BITRATE AND VIDEO DATA 652
UPDATE RATE CONSUMED, PICTURE TYPE COUNTS 684
INIT
COMPUTE TARGET BITRATE FOR PICTURE 654
ESTIMATE QUANTIZER VIA LINEAR REGRESSION MODELING 660
ESTIMATE QUANTIZER BASED ON TARGET BITRATE & BUFFER FULLNESS 656
650
COMPUTE REFINED QUANTIZER ESTIMATE 662
COMPUTE ACTIVITY-BASED QUANTIZER ESTIMATE 658
COMPUTE DIFFERENCE IN QUANTIZER ESTIMATES [q del] 664
SELECT RATE CONTROL POLICY 666
CALCULATE QUANTIZER 668
SELECT BLOCKING FILTER PARAMETERS 678
SELECT MODE PARAMETERS 670
FRAME DECIMATION 676
ZERO COEFFICIENTS 672
ZERO MOTION VECTORS 674
RATE CONTROL RESPONSE
CODE PICTURE 680
END
YES
VIDEO SEQUENCE COMPLETED? 682
NO

FIG. 6B

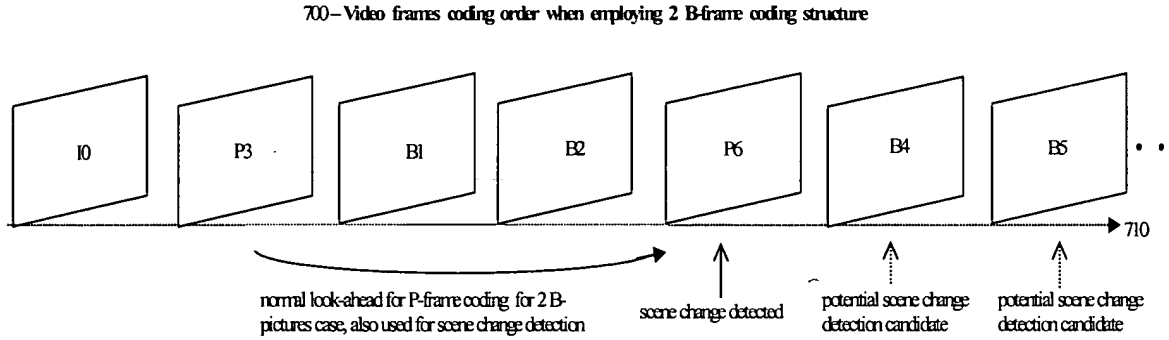
700 – Video frames coding order when employing 2 B-frame coding structure
I0
P3
B1
B2
P6
B4
B5
710
normal look-ahead for P-frame coding for 2 B-pictures case, also used for scene change detection
scene change detected
potential scene change detection candidate
potential scene change detection candidate

**FIG. 7**

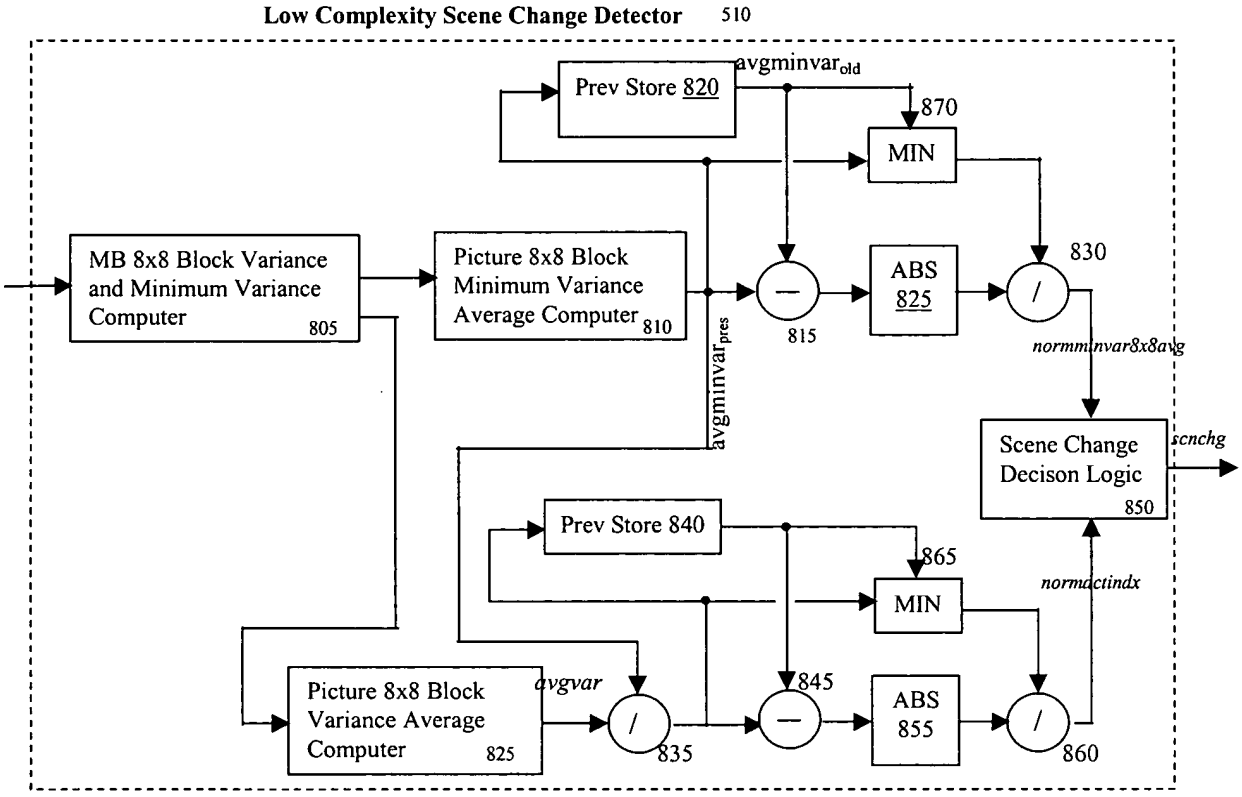
Low Complexity Scene Change Detector 510
Prev Store 820
avgminvar_old
870
MIN
MB 8x8 Block Variance and Minimum Variance Computer 805
Picture 8x8 Block Minimum Variance Average Computer 810
ABS 825
830
815
normminvar8x8avg
avgminvar_pres
Scene Change Decison Logic 850
scnchg
Prev Store 840
865
MIN
normactindx
Picture 8x8 Block Variance Average Computer 825
avgvar
845
ABS 855
835
860

**FIG. 8A**

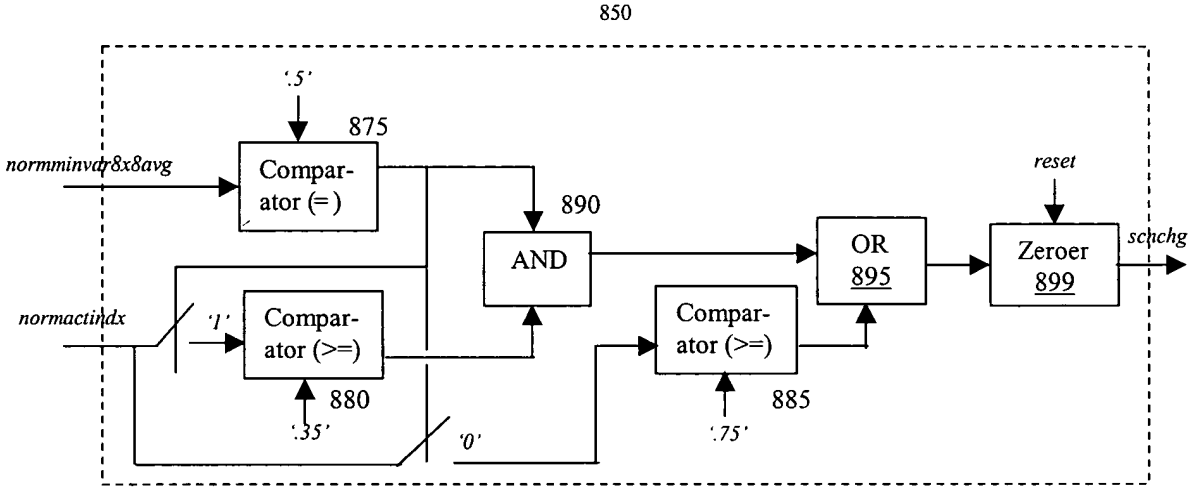
850
'.5'
875
normminvar8x8avg
Compar-
ator (=)
890
AND
OR
895
reset
Zeroer
899
schchg
normactindx
'1'
Compar-
ator (>=)
880
'.35'
'0'
Compar-
ator (>=)
885
'.75'

**FIG. 8B**

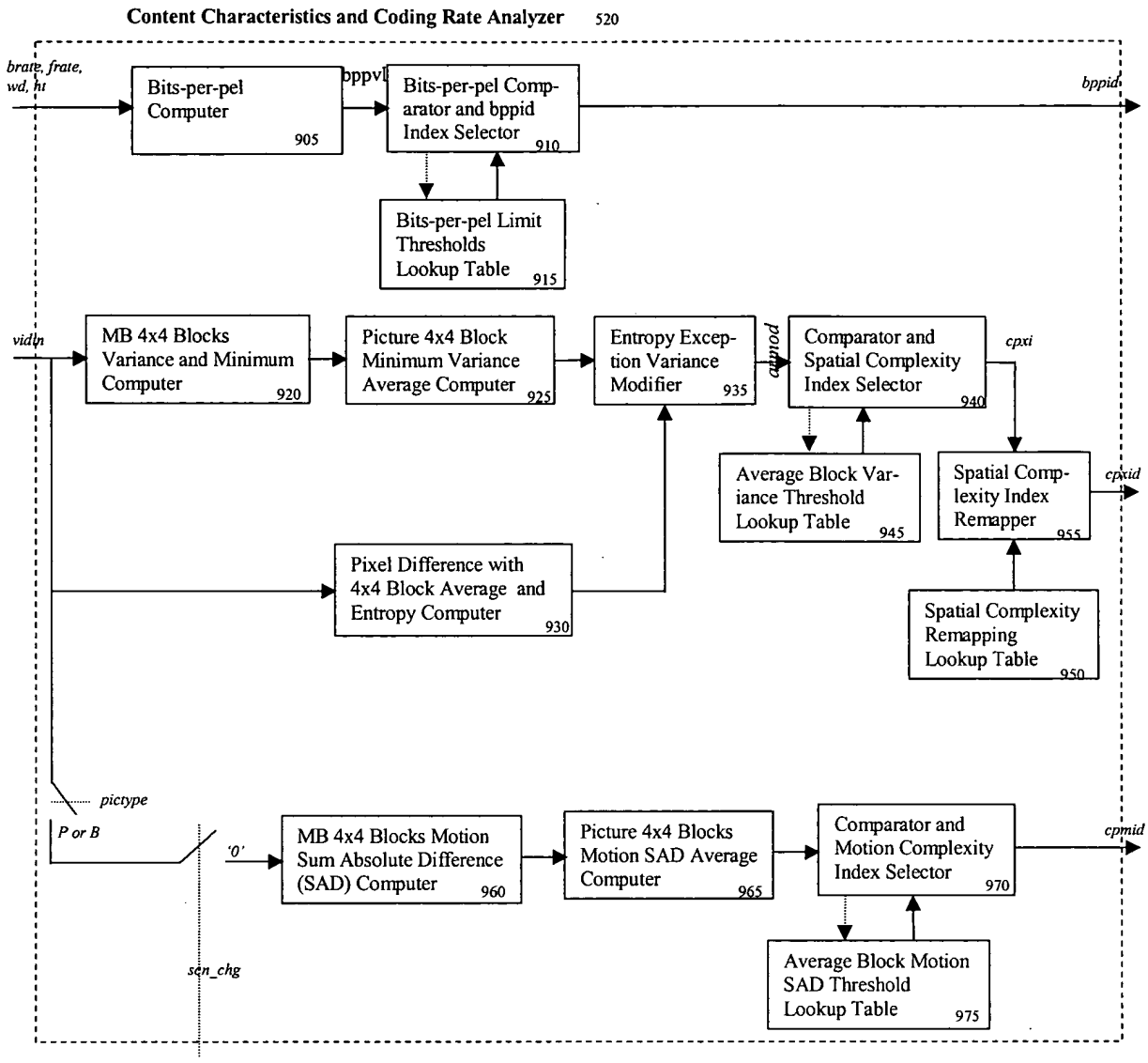
Content Characteristics and Coding Rate Analyzer 520
brate, frate, wd, ht
Bits-per-pel Computer 905
bppvl
Bits-per-pel Comparator and bppid Index Selector 910
bppid
Bits-per-pel Limit Thresholds Lookup Table 915
vidin
MB 4x4 Blocks Variance and Minimum Computer 920
Picture 4x4 Block Minimum Variance Average Computer 925
Entropy Exception Variance Modifier 935
qpmod
Comparator and Spatial Complexity Index Selector 940
cpxi
Average Block Variance Threshold Lookup Table 945
Spatial Complexity Index Remapper 955
cpxid
Pixel Difference with 4x4 Block Average and Entropy Computer 930
Spatial Complexity Remapping Lookup Table 950
pictype
P or B
'0'
MB 4x4 Blocks Motion Sum Absolute Difference (SAD) Computer 960
Picture 4x4 Blocks Motion SAD Average Computer 965
Comparator and Motion Complexity Index Selector 970
cpmid
scn_chg
Average Block Motion SAD Threshold Lookup Table 975

**FIG. 9**

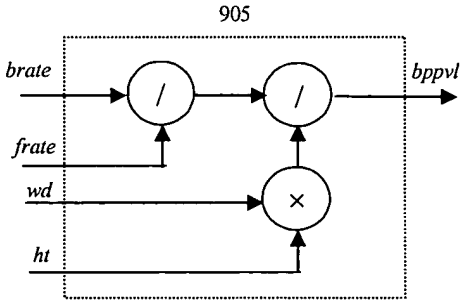
905
brate
frate
wd
ht
/
/
×
bppvl

**FIG. 10A**

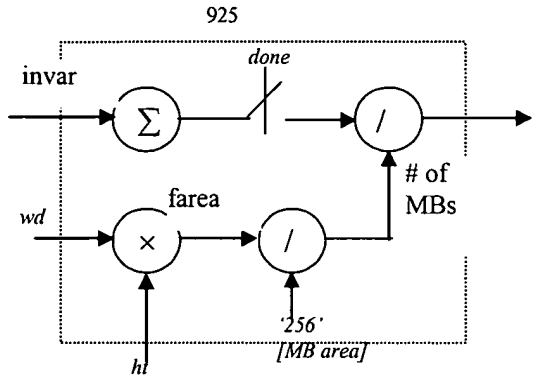


**FIG. 10B**

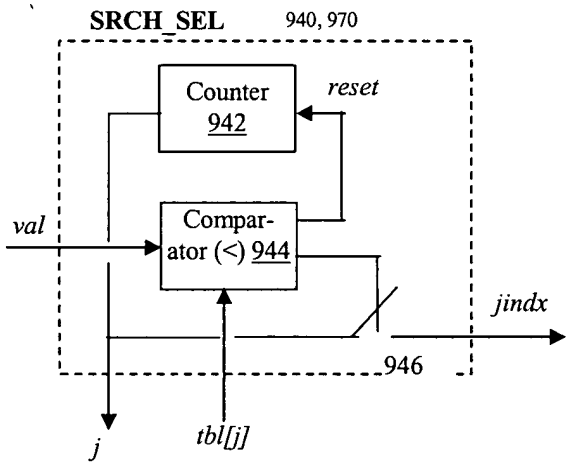


**FIG. 10C**

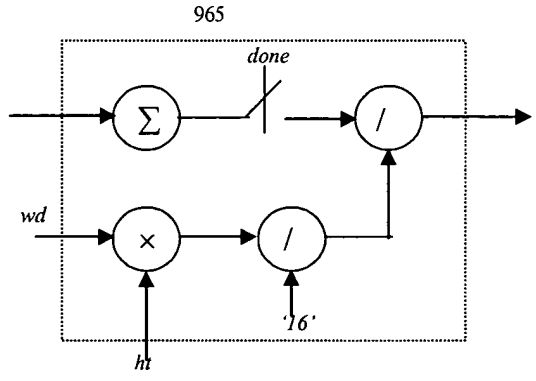


**FIG. 10D**

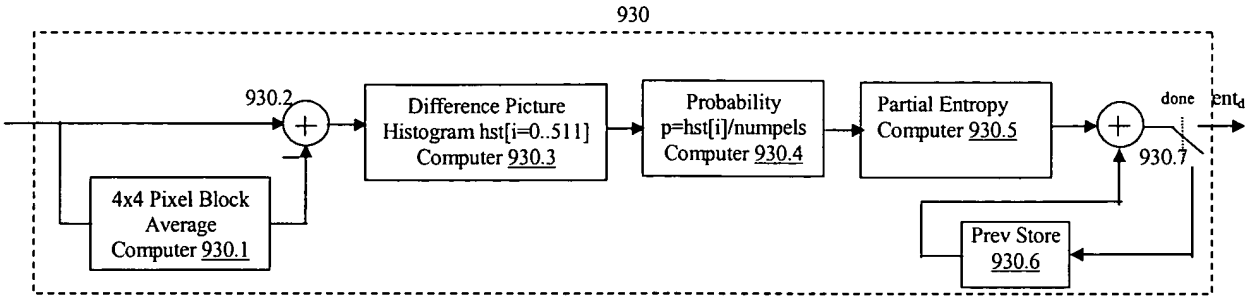


FIG. 11A

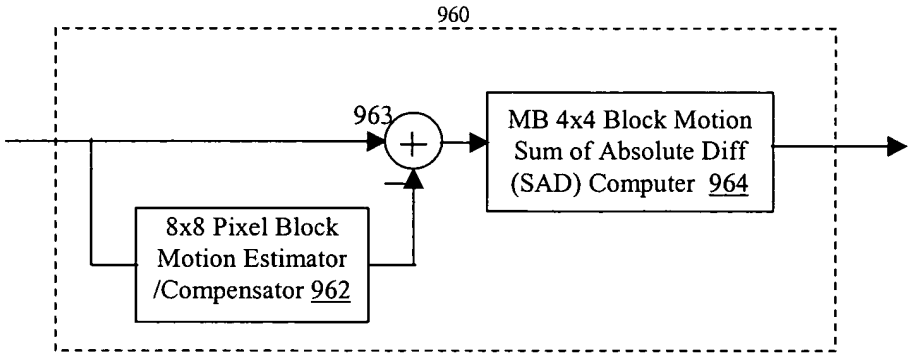


FIG. 11B

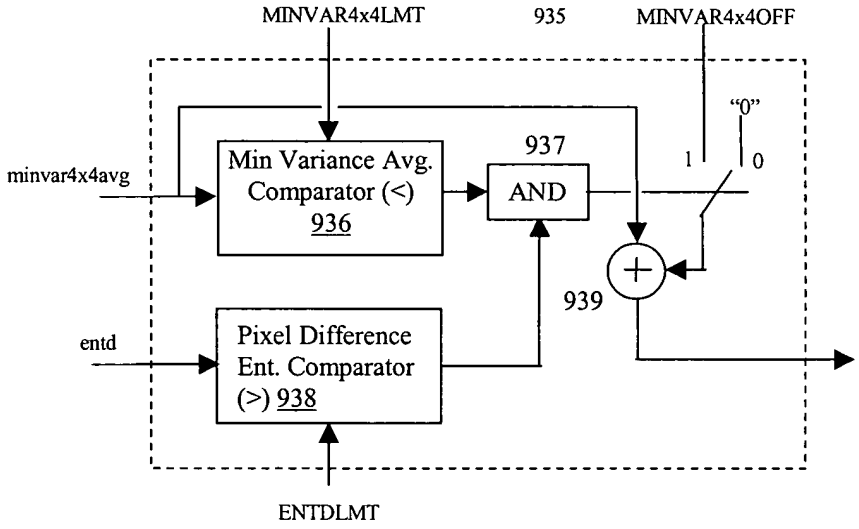


FIG. 11C

**BBPID**

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 0.01052 | 0.02104 | 0.04208 | 0.08416 | 0.16832 | 0.33664 | 0.67328 | 1.34656 | 2.69312 |

FIG. 12A - 915

CPID

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.0 | 2.0 | 4.5 | 8.5 | 12.5 | 17.0 | 22.0 | 28.0 | 34.0 | 41.0 | 50.0 | 60.0 |

| 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|
| 71.0 | 84.0 | 100.0 | 120.0 | 145.0 | 177.0 |

**FIG. 12B - 945**

CPXID

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 |

**FIG. 12C -955**

CPMID

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 32.0 | 64.0 | 112.0 | 184.0 | 280.0 |

**FIG. 12D - 975**

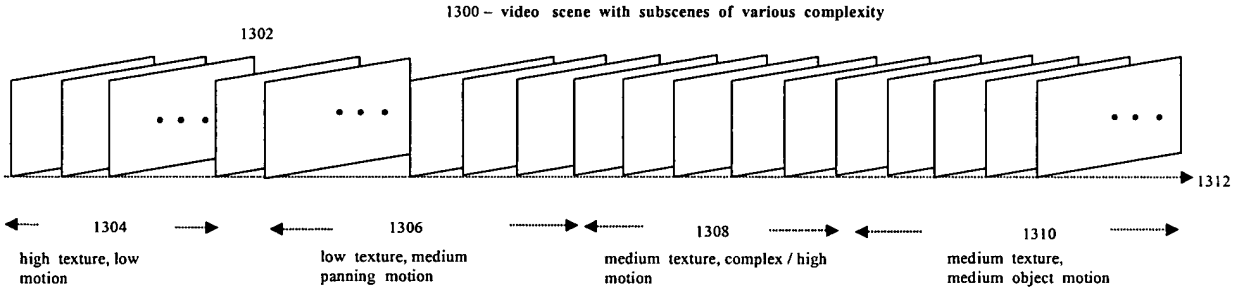


**FIG. 13**

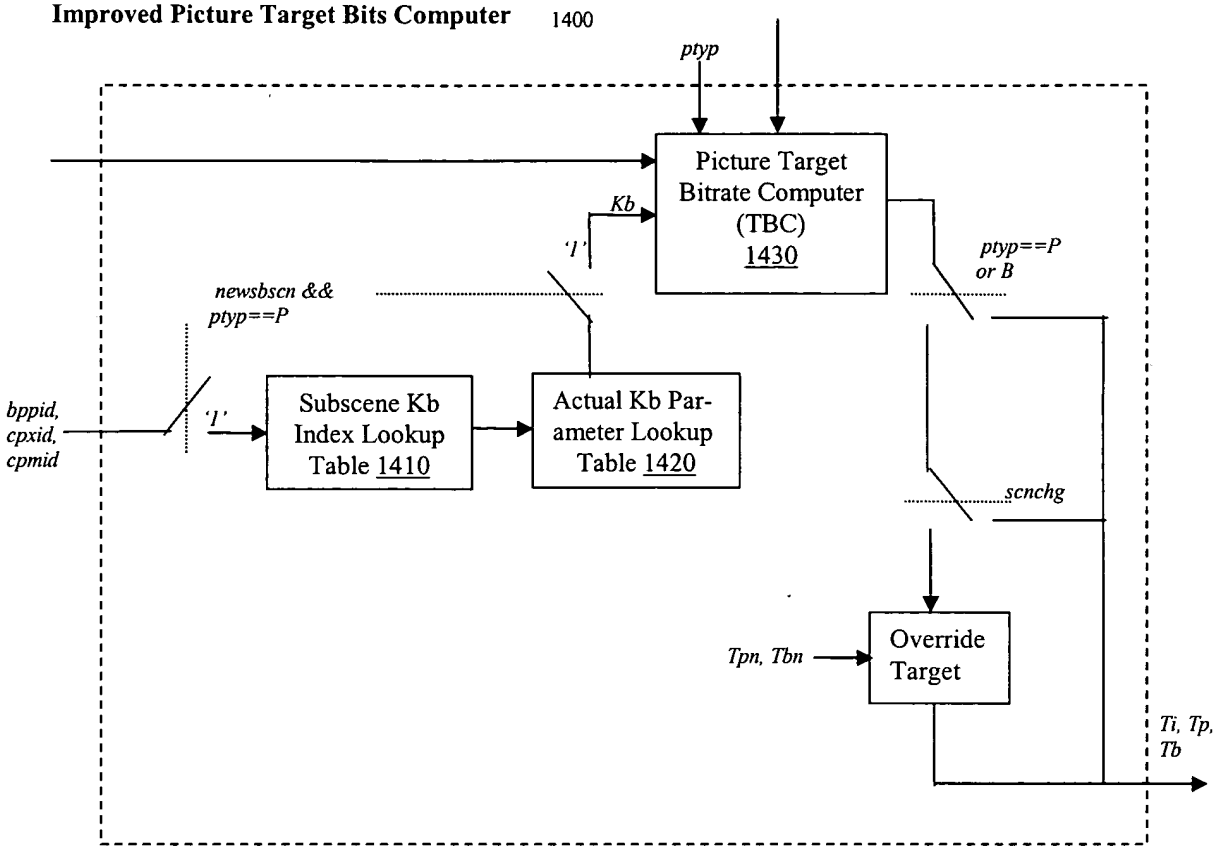


FIG. 14

| KBID | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| | 1.0250 | 1.2125 | 1.4000 | 1.5875 | 1.7500 | 1.9375 | 2.1250 |

FIG. 15A

CPMID=2

| BPPID \ CPXID | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | 4 |
| 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 |
| 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 4 |
| 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 |
| 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 |
| 5 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| 6 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 7 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 8 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 |

CPMID=1

| BPPID \ CPXID | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 |
| 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 |
| 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 |
| 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 5 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 6 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 7 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 |
| 8 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |

FIG. 15B

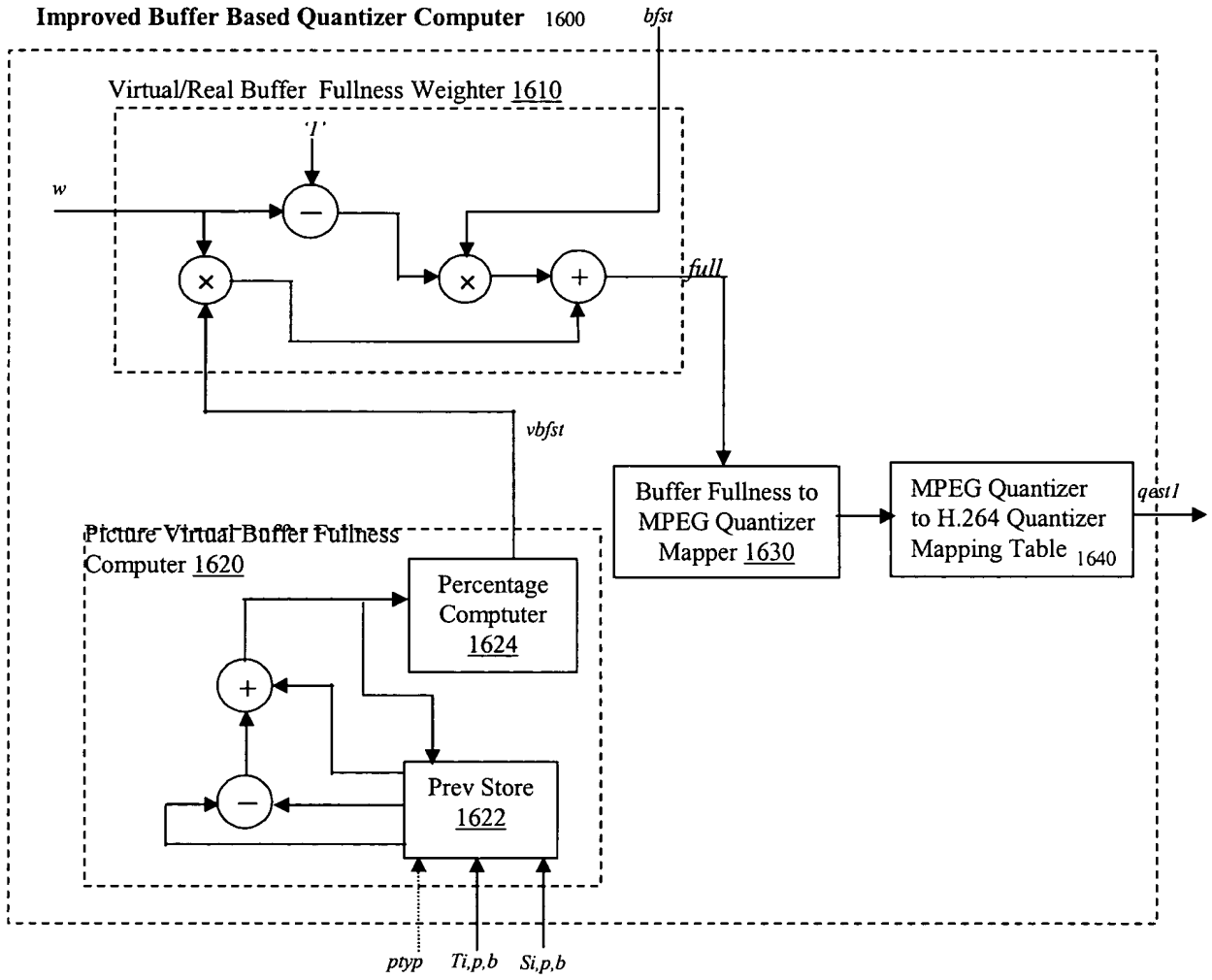
Improved Buffer Based Quantizer Computer 1600
bfst
Virtual/Real Buffer Fullness Weighter 1610
'1'
w
full
vbfst
Buffer Fullness to MPEG Quantizer Mapper 1630
MPEG Quantizer to H.264 Quantizer Mapping Table 1640
qest1
Picture Virtual Buffer Fullness Computer 1620
Percentage Comptuter 1624
Prev Store 1622
ptyp
Ti,p,b
Si,p,b

**FIG. 16**

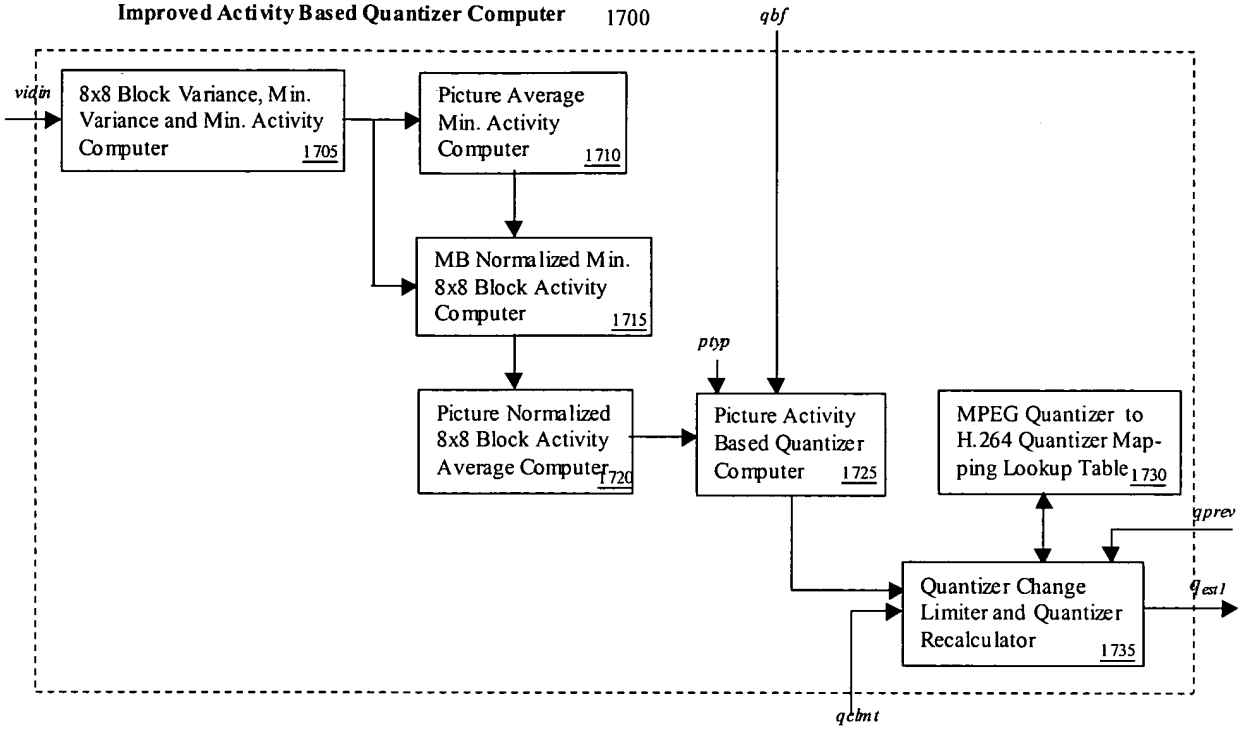


**FIG. 17**

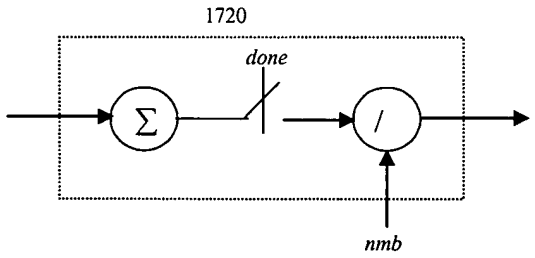


**FIG. 18A**

qh264

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .250 | .281 | .315 | .353 | .396 | .446 | .500 | .561 | .623 | .707 | .794 | .891 | 1.00 |

| 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.12 | 1.26 | 1.41 | 1.59 | 1.78 | 2.00 | 2.25 | 2.52 | 2.82 | 3.18 | 3.56 | 4.00 | 4.49 |

| 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.04 | 5.65 | 6.35 | 7.13 | 8.00 | 8.98 | 10.08 | 11.31 | 12.70 | 14.25 | 16.00 | 17.96 | 20.16 |

| 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 22.63 | 25.39 | 28.51 | 32.00 | 35.92 | 40.31 | 45.25 | 50.80 | 57.02 | 64.00 | 71.83 | 80.64 | 90.51 |

FIG. 18B

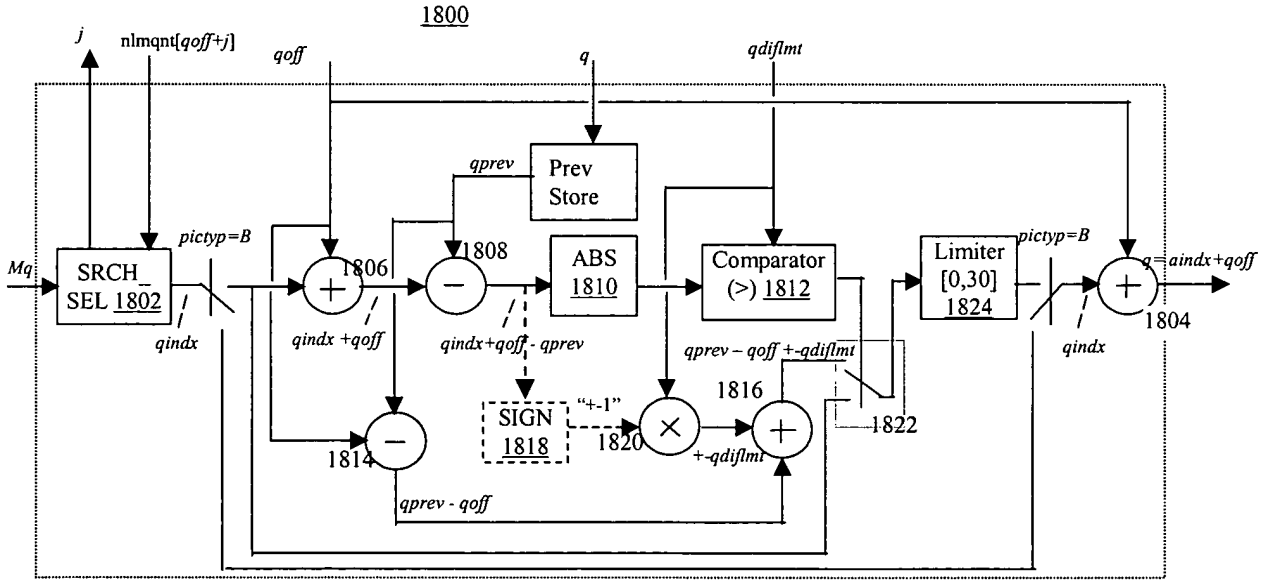


FIG. 18C

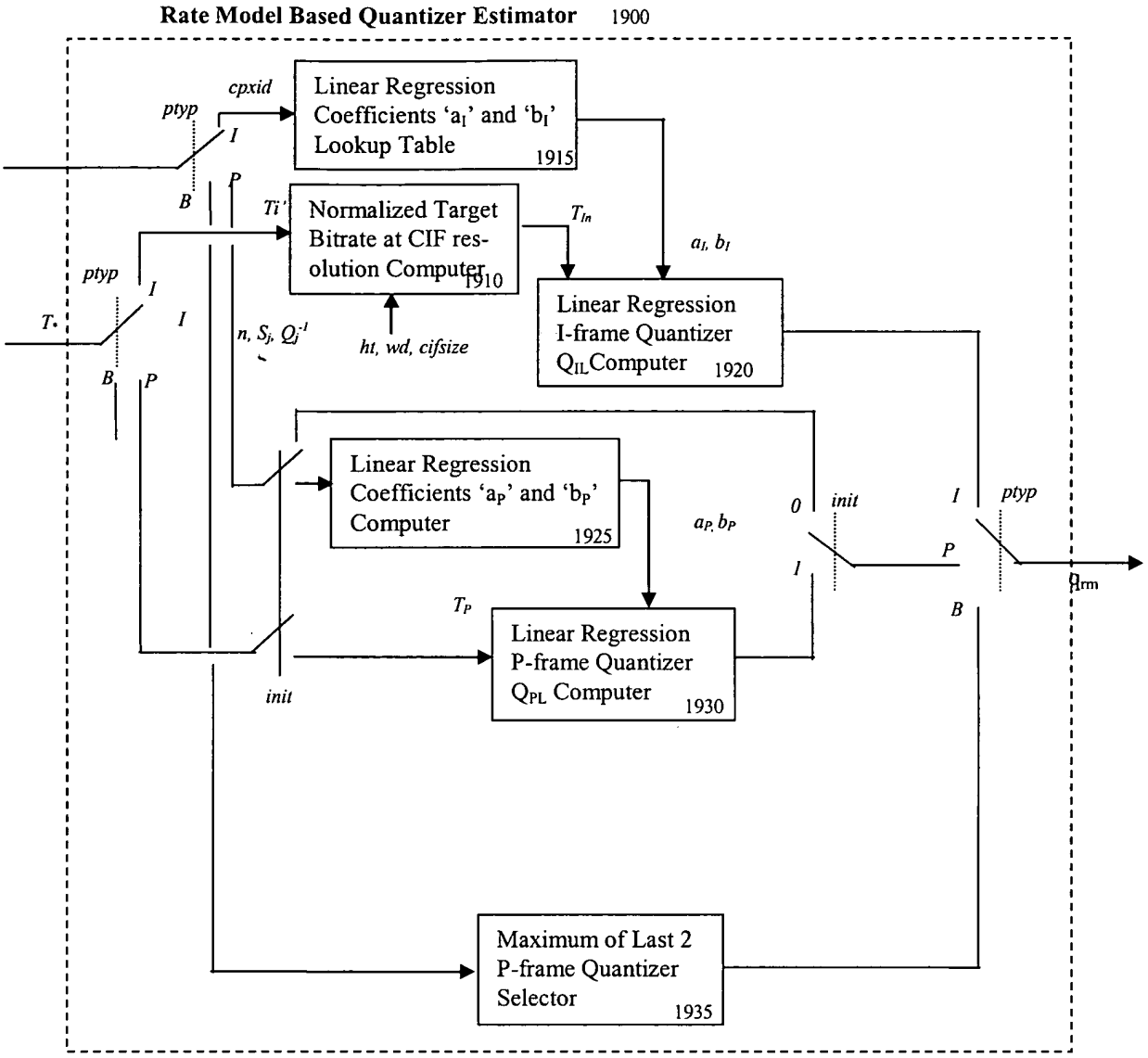


FIG. 19

CPID

| 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| -68134.59213 | -87003.98467 | -106202.60465 | -125401.23463 | -133506.23620 | -141558.73699 |
| 6 | 7 | 8 | 9 | 10 | 11 |
| -149611.24778 | -151588.19751 | -220858.39744 | -293963.81117 | -254808.46319 | -215653.11522 |
| 12 | 13 | 14 | 15 | 16 | 17 |
| -207487.50918 | -1993321.90315 | -191155.48428 | -182989.06541 | -178235.75132 | -169521.36854 |

FIG. 20A

CPID

| 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 3313453.21342 | 3993567.19336 | 4565785.16255 | 5138003.13174 | 5715464.15501 | 6104194.66665 |
| **6** | **7** | **8** | **9** | **10** | **11** |
| 6492925.17829 | 6678722.15535 | 9084900.80067 | 11517856.77655 | 10611605.70466 | 9705354.63278 |
| **12** | **13** | **14** | **15** | **16** | **17** |
| 9777071.15962 | 9848787.68646 | 9920504.21330 | 9992220.74014 | 10623397.89991 | 11435042.39299 |

**FIG. 20B**

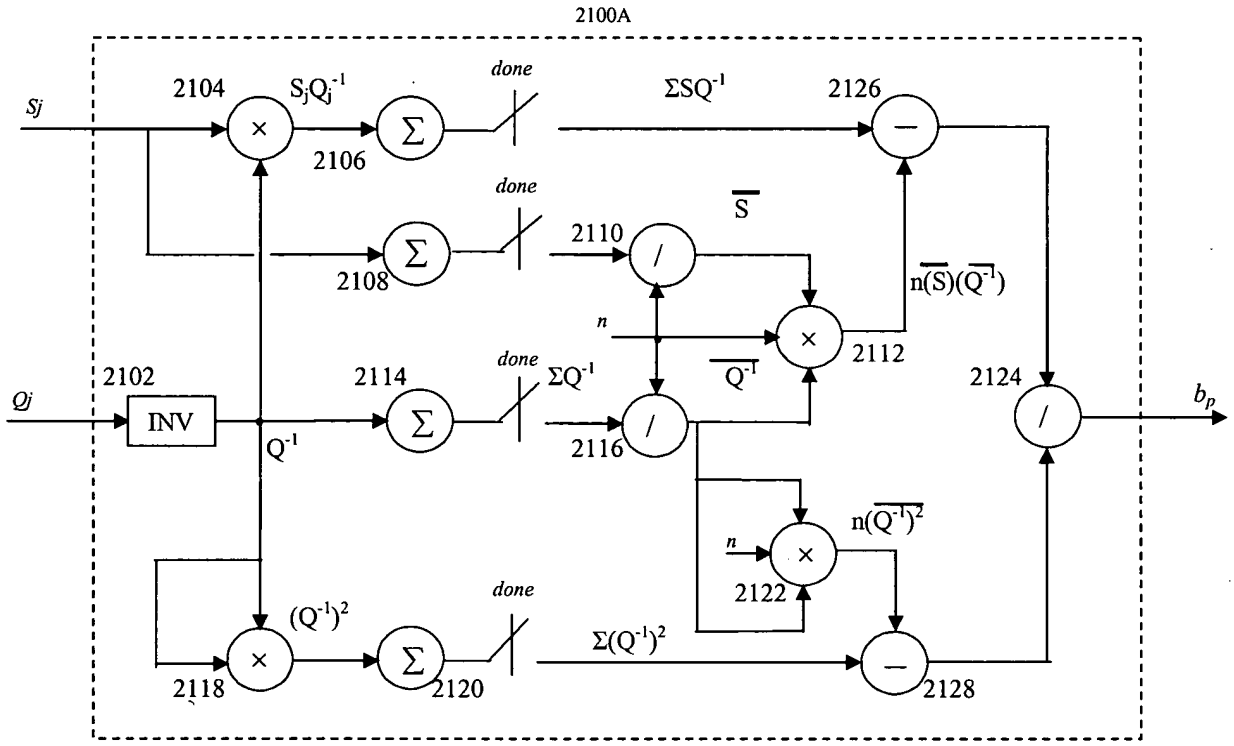


**FIG. 21A**

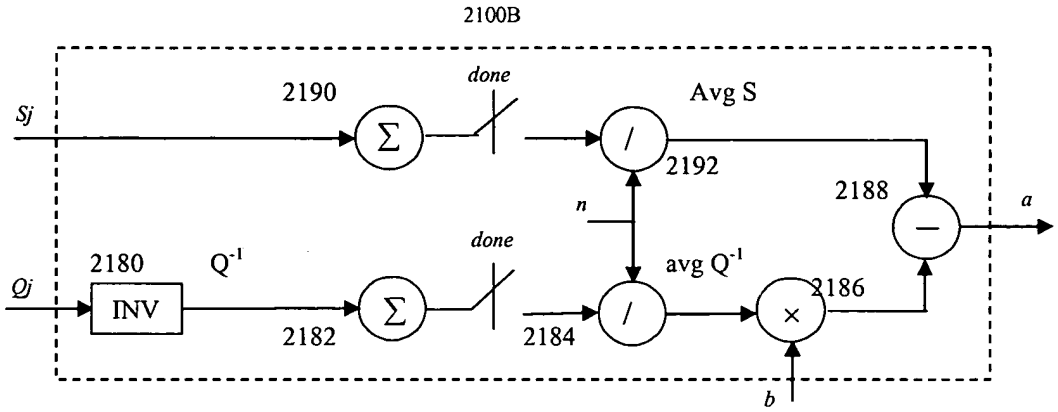


FIG. 21B

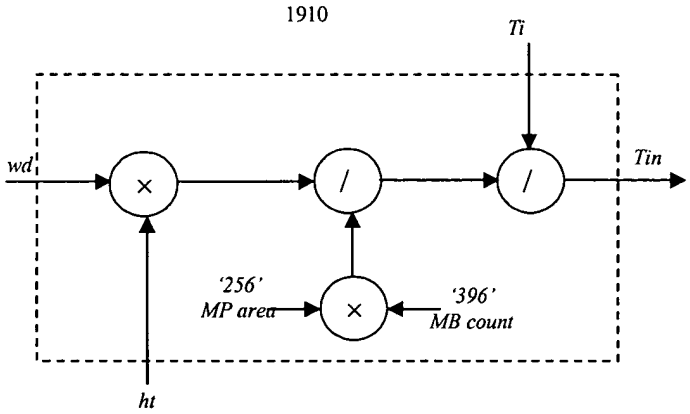


FIG. 22A

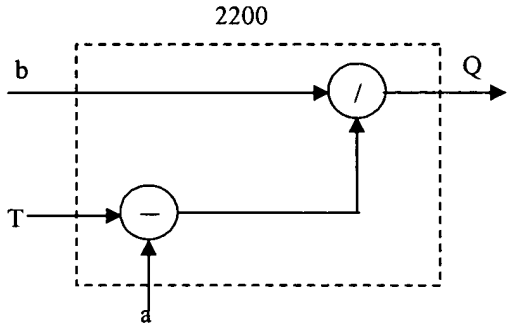


FIG. 22B

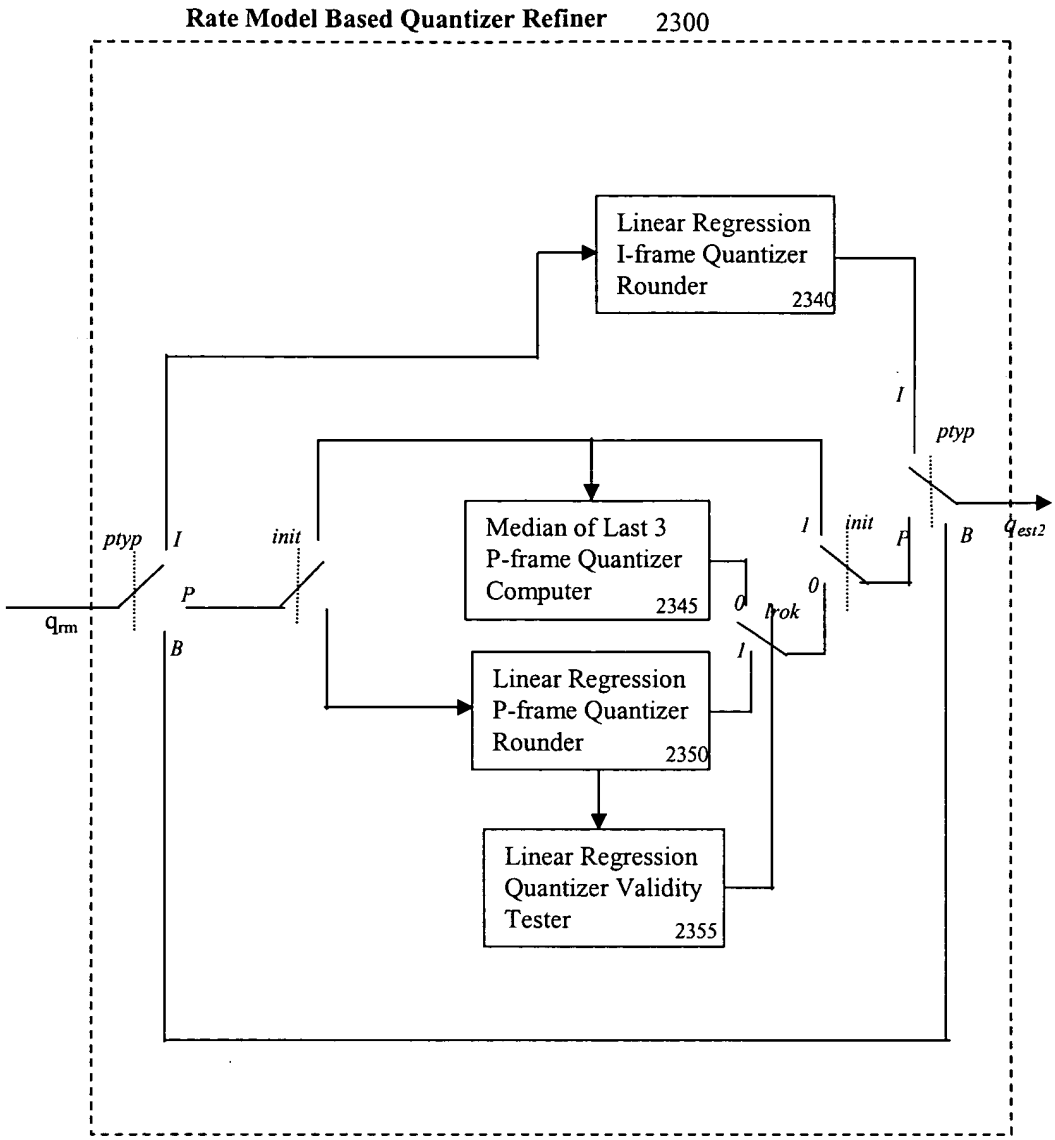


**FIG. 23**

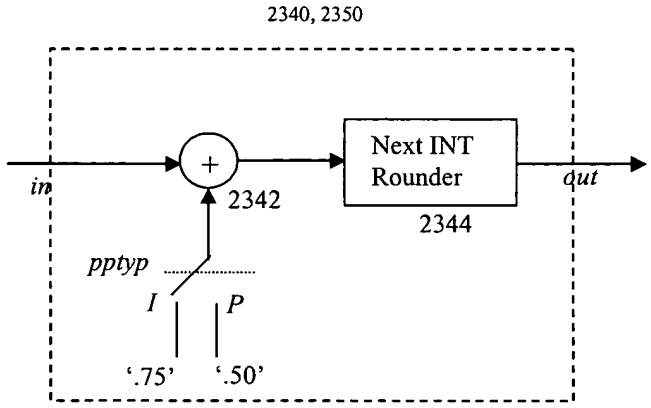


**FIG. 24A**

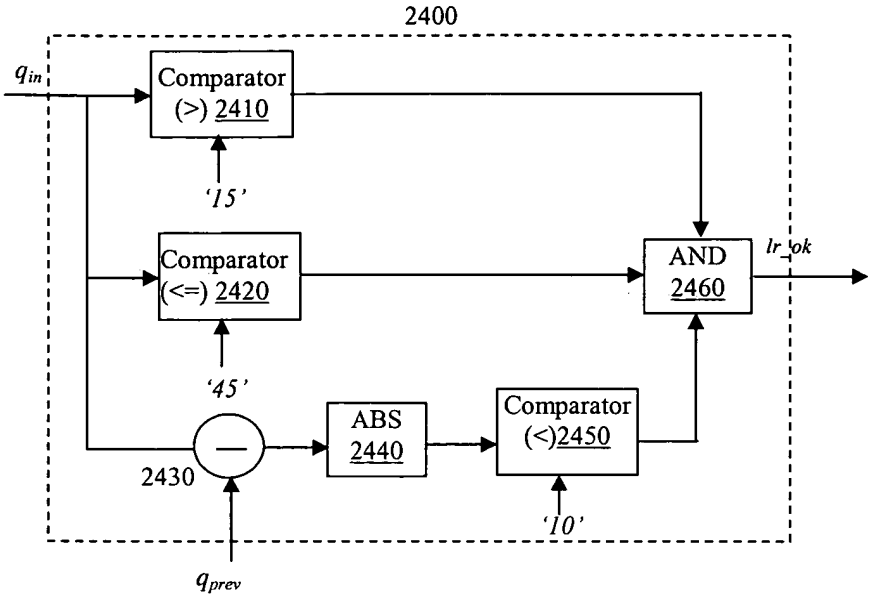


**FIG. 24B**

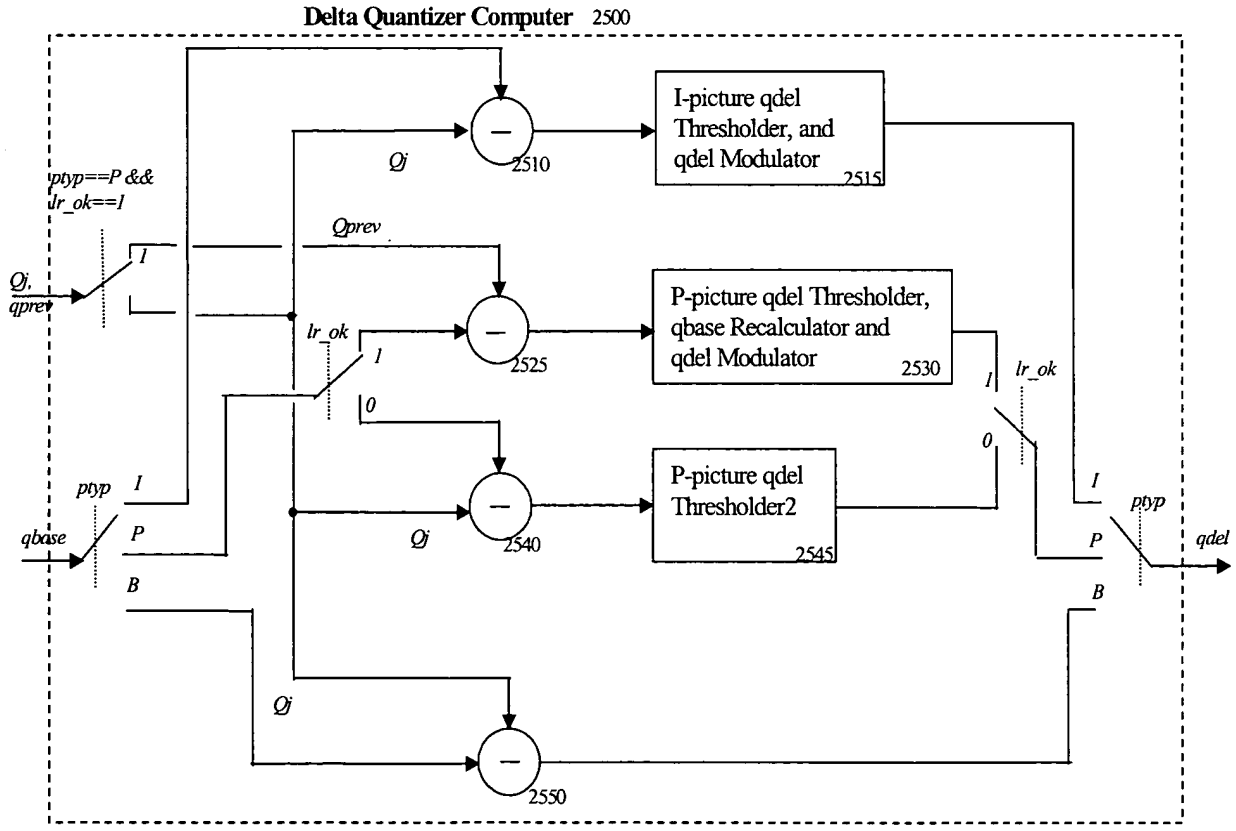


**FIG. 25**

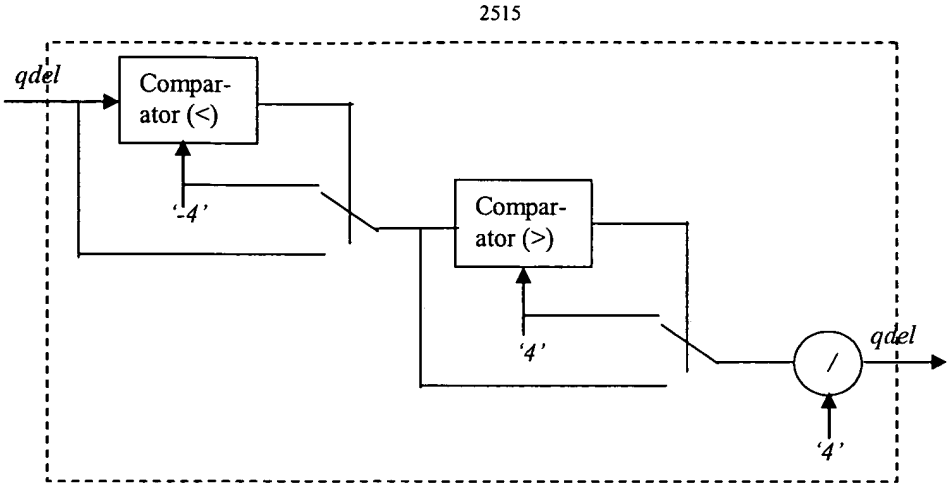


FIG. 26A

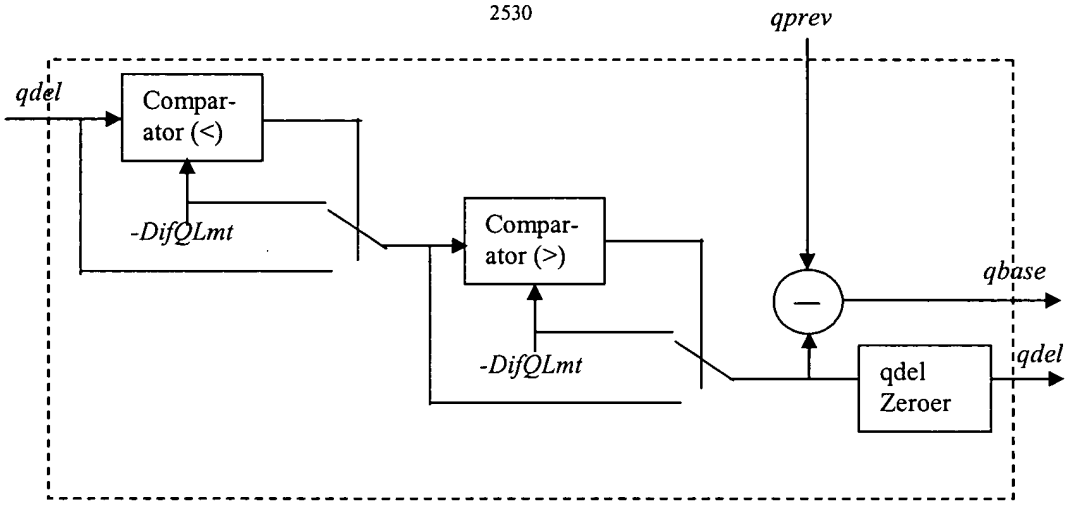


FIG. 26B

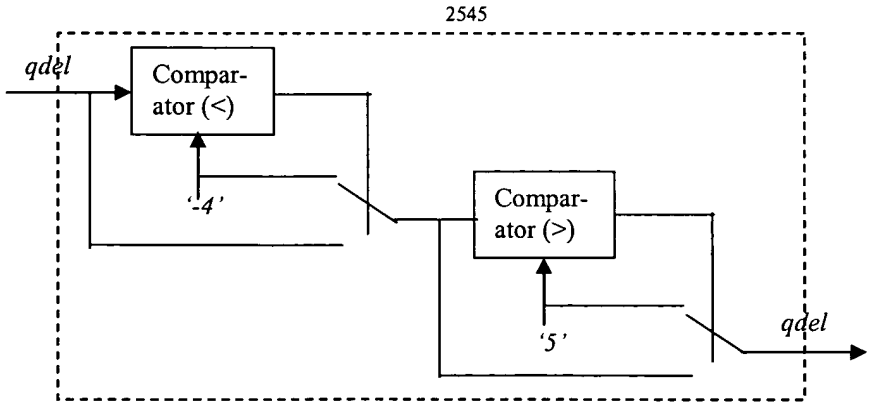


FIG. 26C

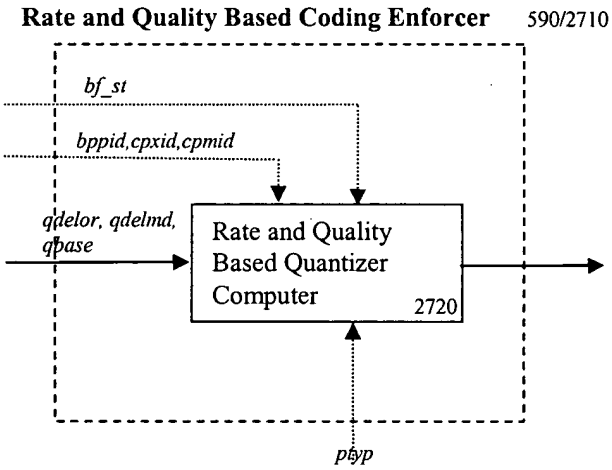
Rate and Quality Based Coding Enforcer
590/2710
bf_st
bppid,cpxid,cpmid
qdelor, qdelmd, qbase
Rate and Quality Based Quantizer Computer
2720
pbyp

FIG. 27

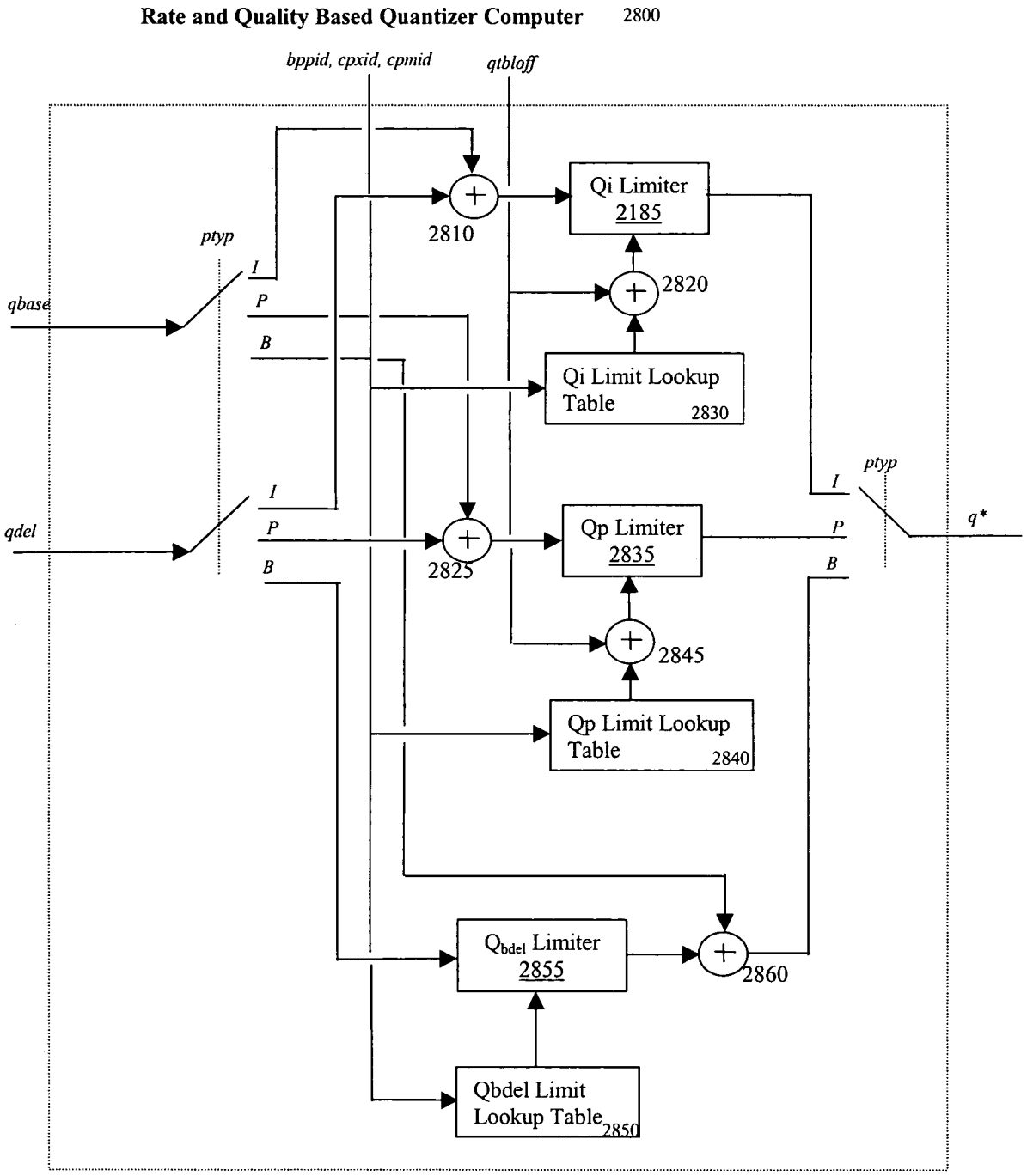
Rate and Quality Based Quantizer Computer 2800
bppid, cpxid, cpmid
qtbloff
ptyp
qbase
qdel
I
P
B
2810
Qi Limiter
2185
2820
Qi Limit Lookup
Table
2830
2825
Qp Limiter
2835
2845
Qp Limit Lookup
Table
2840
Qbdel Limiter
2855
2860
Qbdel Limit
Lookup Table
2850
q*

**FIG. 28**

| BPPID \ CPXID | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 1 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 3 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 4 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 7 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 8 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

FIG. 29A

| BPPID \ CPXID | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 1 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 3 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 4 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 6 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 7 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 8 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

FIG. 29B

| BPPID \ CPXID | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | 4 |
| 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 |
| 2 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 4 |
| 3 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 |
| 4 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 |
| 5 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 |
| 6 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| 7 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 2 |
| 8 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 |

FIG. 29C

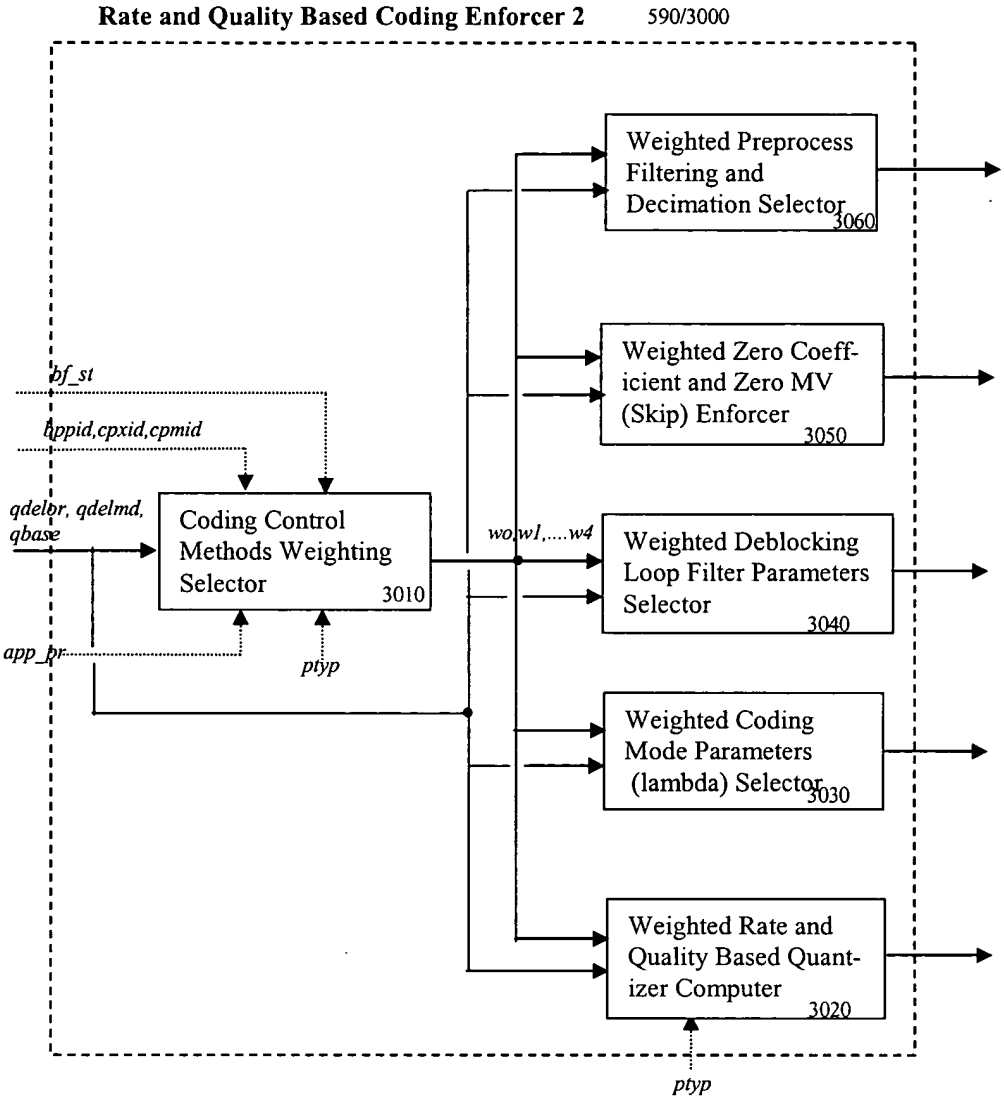
Rate and Quality Based Coding Enforcer 2
590/3000
Weighted Preprocess Filtering and Decimation Selector
3060
Weighted Zero Coeff-icient and Zero MV (Skip) Enforcer
3050
Weighted Deblocking Loop Filter Parameters Selector
3040
Weighted Coding Mode Parameters (lambda) Selector
3030
Weighted Rate and Quality Based Quant-izer Computer
3020
bf_st
hppid,cpxid,cpmid
qdelbr, qdelmd, qbase
Coding Control Methods Weighting Selector
3010
wo,w1,....w4
app_pr
ptyp
ptyp

**FIG. 30**

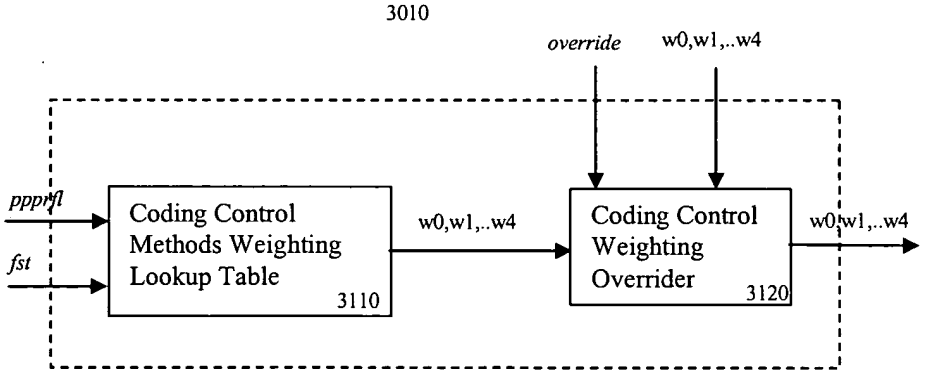
3010
override
w0,w1,..w4
pppmfl
fst
Coding Control Methods Weighting Lookup Table
3110
w0,w1,..w4
Coding Control Weighting Overrider
3120
w0,w1,..w4

**FIG. 31**

| bfst \ app_pr | 0 | 1 | 2 | 3 | 4 | 5 | 6 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.23 | 0.30 | 0.18 | 0.26 | 0.07 | 0.07 | 0.26 | 0.14 | 0.23 | 0.1 | 0.3 |
| 1 | 0.11 | 0.48 | 0.25 | 0.03 | 0.23 | 0.15 | 0.19 | 0.12 | 0.27 | 0.08 | 0.34 |
| 2 | 0.08 | 0.21 | 0.45 | 0.18 | 0.15 | 0.12 | 0.15 | 0.14 | 0.21 | 0.08 | 0.35 |
| 3 | 0.44 | 0.39 | 0.07 | 0.09 | 0.31 | 0.45 | 0.28 | 0.11 | 0.23 | 0.09 | 0.29 |
| 4 | 0.47 | 0.30 | 0.28 | 0.12 | 0.08 | 0.35 | 0.10 | 0.12 | 0.24 | 0.07 | 0.32 |
| 5 | 0.44 | 0.37 | 0.10 | 0.30 | 0.29 | 0.15 | 0.41 | 0.13 | 0.2 | 0.08 | |
| 6 | 0.20 | 0.47 | 0.38 | 0.22 | 0.44 | 0.27 | 0.27 | 0.1 | 0.22 | | |
| 7 | 0.10 | 0.12 | 0.47 | 0.27 | 0.10 | 0.09 | 0.22 | 0.11 | | | |
| 8 | 0.30 | 0.22 | 0.49 | 0.46 | 0.18 | 0.49 | 0.47 | | | | |
| 9 | 0.11 | 0.44 | 0.07 | 0.03 | 0.36 | 0.09 | 0.35 | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.09 | 0.09 | 0.05 | 0.27 | 0.21 | 0.27 | 0.31 | 0.25 | 0.09 | 0.33 | |
| 1 | 0.22 | 0.45 | 0.16 | 0.20 | 0.24 | 0.45 | 0.18 | 0.09 | 0.38 | | |
| 2 | 0.09 | 0.12 | 0.46 | 0.26 | 0.21 | 0.15 | 0.07 | 0.36 | | | |
| 3 | 0.37 | 0.05 | 0.16 | 0.01 | 0.28 | 0.06 | 0.19 | | | | |
| 4 | | | | | | | | | | | |

FIG. 32

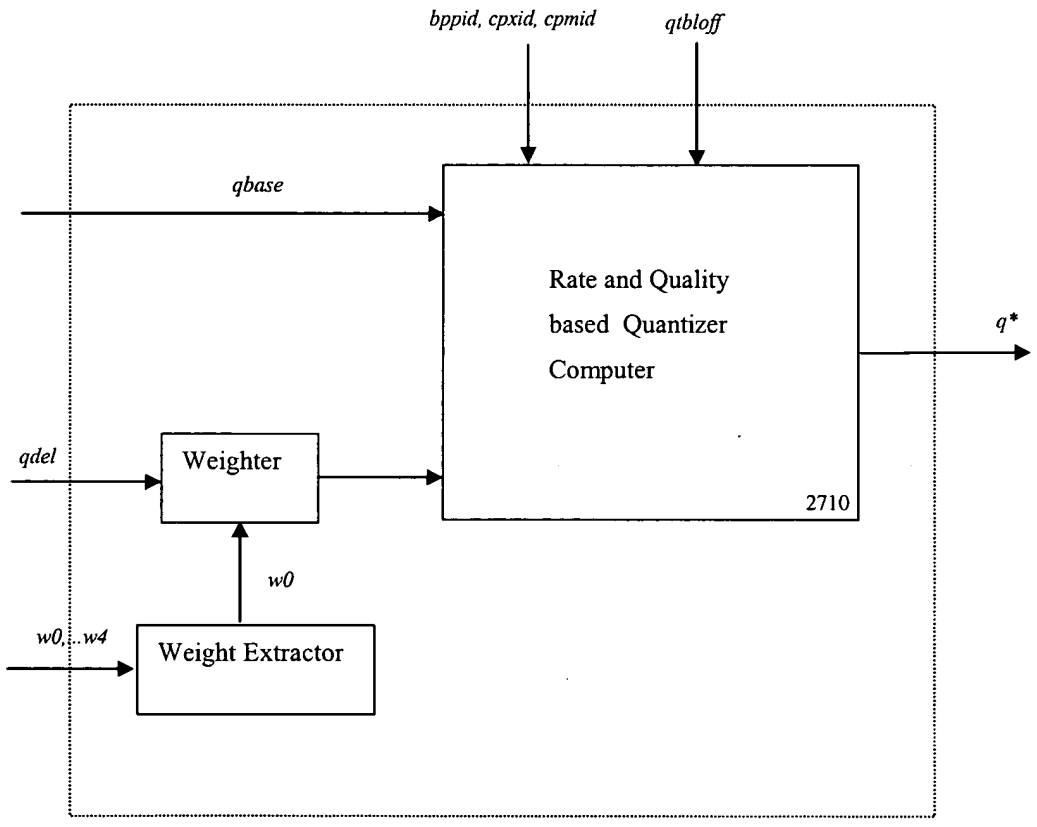


FIG. 33